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International cooperation to reduce the impact of the El Niño phenomenon

Report of the Secretary-General

Summary

The present report is submitted in pursuance of General Assembly resolutions 52/200 and 53/185. It thus builds on the previous report of the Secretary-General on this topic (A/53/487). The Council is invited to consider the report in conjunction with the report of the Secretary-General entitled "Recommendations on how the United Nations will deal with the reduction of natural disasters after the conclusion of the International Decade for Natural Disaster Reduction" (A/54/136–E/1999/89). The present report covers context (sect. I); actions continued or initiated since the Guayaquil seminar (sect. II); and conclusions and recommendations (sect. III). Two annexes prepared by the World Meteorological Organization concern a scientific and technical retrospective (annex I) and a feasibility study for an international research centre (annex II). It is proposed to continue the existing inter-agency cooperation for concerted action on El Niño, to be coordinated within the successor arrangements for the Decade to be decided upon by the General Assembly at its fifty-fourth session, and to ensure the continuation of its full functional complementarity with the work of the Inter-Agency Committee on the Climate Agenda.

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I. Context

1. In response to the occurrence of the El Niño phenomenon in 1997/98, in December 1997 the Inter-Agency Task Force on El Niño was created within the framework of the International Decade for Natural Disaster Reduction (IDNDR). In paragraph 6 of its resolution 52/200, the General Assembly welcomed its establishment for cooperative work on the prevention and mitigation of and preparedness for natural disasters related to the El Niño phenomenon. The Task Force has provided member agencies and their partner agencies outside the United Nations system with a platform for combining their efforts to improve understanding of the El Niño phenomenon, disseminating early warnings on the 1997/98 event and channelling technical assistance and capacity-building resources to Member States threatened or affected by El Niño-related disaster impacts. These actions have once again demonstrated the immense value of interdisciplinary approaches and complementarity in the global disaster reduction effort, as developed within the framework of IDNDR.

2. While the unprecedented strength of the 1997/98 El Niño event presented a great challenge to the disaster reduction community, it also provided new opportunities for international cooperation, spurred by an increasing scientific understanding of the climate system and new developments in climate observations technology and telecommunications. As recently stated in a report by one of the leading governmental institutions on climatic research in the Western hemisphere, the United States National Oceanic and Atmospheric Administration (NOAA), for the first time, affected countries around the world were aware of and could prepare for the climatic impacts associated with El Niño.[1] This clearly reflects well the growing notion of the culture of prevention that IDNDR was mandated to promote. Indeed, as part of their contribution to the Task Force on El Niño and within the framework of IDNDR, member agencies have intensified their ongoing programmes on the El Niño phenomenon or embarked on new ones.

3. In pursuance of General Assembly resolution 52/200 and with the generous support of the Government of Ecuador, the first intergovernmental seminar on the 1997/98 El Niño event was held at Guayaquil, Ecuador, from 9 to 13 November 1998. The seminar provided a substantive interface between the scientific and technological constituencies and their operational partners in disaster prevention, humanitarian disaster management and operational development, including support to local capacity-building. In assessing the efficacy of disaster prevention on the basis of early warning information in various stages of the El Niño event, the seminar reached consensus on the need for more complete atmospheric and oceanographic monitoring in order to improve the modelling of El Niño and the precision of the forecasts. There was also agreement on the need to "socialize" the information disseminated, i.e., to provide data tailored to the acute needs of the communities to be affected.

4. The Declaration of Guayaquil, adopted at the closing session of the seminar on the basis of its deliberations on the effectiveness of the international response to the 1997/98 El Niño event, contained a number of recommendations on the way forward. Following a proposal submitted by the Government of Ecuador, the Declaration called upon the United Nations to assess the feasibility of establishing an international centre for the research of the El Niño phenomenon at Guayaquil within the context of the Inter-Agency Task Force on El Niño, and to report on its findings to the General Assembly at its fifty-fourth session, through the substantive session of 1999 of the Economic and Social Council.

5. Experience with the 1997/98 El Niño event, presented at sessions on the socio-economic dimension and other programme components of the Guayaquil seminar, demonstrated once again the potentially devastating effects of El Niño-related climate extremes on the sustainable development efforts of developing countries, where most of the impacts occur. As indicated by an analysis performed by Munich Reinsurance, the economic losses incurred by the four most severely hit countries varied from 1.7 per cent of gross national product (GNP) in El Salvador to 11.4 per cent of GNP in Ecuador. International organizations, including the United Nations Development Programme (UNDP), assisted affected Governments in their work of reconstruction and rehabilitation. The Guayaquil Declaration recognized the urgency for actions to strengthen the capacity of existing governmental and intergovernmental programmes to help achieve the objectives of resolution A/RES/52/200. The following main fields were highlighted in particular: climate monitoring; improved prediction; early warning; sector-specific information flows; and capacity-building. The full report on the Guayaquil seminar is available through the United Nations Secretariat.

6. At the fifty-third session of the General Assembly, the Secretary-General submitted a report on progress made with international cooperation to reduce the impact of the El Niño phenomenon (A/53/487), as requested in General Assembly resolution 52/200. While expressing its concern about the widespread and devastating effects of the El Niño/Southern Oscillation (ENSO)in most regions of the world, the General

Assembly at its fifty-third session noted the progress made in the improved scientific understanding of the phenomenon and endorsed the recommendations made in the Secretary-General's report. Subsequently, the Assembly adopted resolution 53/185 on international cooperation to reduce the impact of the El Niño phenomenon, in which it called for, *inter alia*, the continued and full implementation of its resolution 52/200. It also decided, *inter alia*, to consider the La Niña phenomenon in the context of such implementation.[2] In part-fulfilment of Assembly resolution 53/185, operative paragraph 5, the summary report of the intergovernmental Guayaquil seminar, which includes the full text of the Declaration, was submitted to the Commission on Sustainable Development at its seventh session (New York, 19–30 April 1999) as background paper No. 10 (see also sect. II below).

II. Actions continued or initiated since the Guayaquil seminar

7. International activity towards the improved reduction of El Niño-related natural disasters has greatly intensified since the General Assembly, in its resolution 52/200, decided to intensify inter-agency collaboration and encourage more attention for this subject at the national and regional levels. In the short time since the intergovernmental Guayaquil seminar and the discussions on El Niño at the fifty-third General Assembly, several new initiatives have been launched and some that already existed within the framework of IDNDR have been intensified. Although these projects will eventually contribute to the full implementation of Assembly resolutions 52/200 and 53/185, their final assessment will only be possible after more time is given to secure the institutional arrangements and resources needed for the tasks to be undertaken.

8. For example, in an early follow-up of Assembly resolution 52/200, the World Meteorological Organization (WMO) agreed to take the lead in respect of the science and technology roles of the Inter-Agency Task Force on El Niño, in particular in relation to the understanding, observing and predicting of the El Niño phenomenon and its related meteorological and hydrological impacts. Accordingly, WMO presented a proposal for a scientific and technical retrospective of the 1997/98 ENSO event to the second meeting of the Inter-Agency Committee on the Climate Agenda (IACCA), held at Geneva on 16 and 17 April 1998, as an input to the Inter-Agency Task Force on El Niño. With the endorsement of IACCA, WMO embarked on the retrospective, mainly based on information solicited from its members on national impacts, the national capacity to meet needs and the views of other national institutions. A progress report on this component of the Inter-Agency Task Force's work has been presented to the Thirteenth WMO Congress, held at Geneva from 4 to 26 May 1999 (for a summary, see annex I below). The full report is expected to be before the General Assembly at its fifty-fourth session.

9. In accordance with its lead role on science and technology in the Inter-Agency Task Force on El Niño, WMO embarked on a feasibility study for an international centre for the research of the El Niño phenomenon at Guayaquil, as requested in the Declaration of Guayaquil. The study started off with a WMO mission to Ecuador from 27 January to 7 February 1999. Consultations were held with senior government officials representing various sector agencies at Quito and Guayaquil, and with relevant international organizations[3] and institutes.[4]

10. The outcome of the study was positive in the sense that the proposed centre not only has the full support of the Government of Ecuador and the national and regional institutions with which it would cooperate, but that such support may also be expected from the wider international climate science constituency. The centre would have two main functions: to promote and undertake research on the ENSO phenomenon and mathematical modelling to permit "downscaling" of global climate predictions to regional and national scales; and to provide outreach services to the community of users of ENSO data and predictions. A brief progress report on the feasibility study is contained in annex II below.

11. In parallel with its support for the feasibility study, WMO is acting as the executing agency for an Inter-American Development Bank-funded study on the prediction and amelioration of socio-economic impacts of ENSO in Latin America and the Caribbean. The specific objective of this 21-month project are: (a) to evaluate the existing institutional and technical forecasting capabilities in all countries of the region to anticipate and cope with El Niño's consequences; (b) to identify on a geographical basis, by groups of countries, the more vulnerable economic sectors and population groups; (c) to analyse the economic value of improved early warning systems as compared with the existing situation; and (d) to prepare proposals for improved early warning systems in selected countries or groups of countries within the subregions of Meso-America, the Caribbean and South America, to ameliorate the socio-economic impacts of El Niño. WMO has continued to produce and distribute regular updates on the demise of the El Niño phase and the onset of the La Niña phase, in

collaboration with the national meteorological services of its Member countries and climate research institutions.

12. Other agencies have taken initiatives in accordance with their mandates. Building on some of the main conclusions from the Guayaquil seminar, the United Nations Environment Programme (UNEP) has formulated a project proposal for the assessment of how early warning and other El Niño-related information was used at the country and community levels for the mitigation of El Niño impacts during the 1997/98 event. Supported by the United Nations Fund For International Partnerships, this inter-agency project will be undertaken by core teams in 12 countries,[5] with the participation of UNEP, WMO, the United Nations University, IDNDR, and the United States National Center for Atmospheric Research. The results are expected to be available in December 2000.

13. As a spin-off of the participation of the World Health Organization (WHO) in the Inter-Agency Task Force on El Niño and with inputs from several of its collaborating centres, WHO has prepared a bibliography on the public health hazards associated with the ENSO phenomenon. It will soon be made available on the WHO Web site as a contribution to the work of the Task Force.

14. The specific El Niño concerns with regard to natural disaster reduction have been the subject of discussion at various IDNDR conferences, including an international IDNDR early warning conference, held at Potsdam, Germany from 7 to 11 September 1998, an IDNDR-Economic and Social Commission for Asia and the Pacific regional conference for Asia, held at Bangkok from 13 to 17 February 1999, and an IDNDR-UNEP regional conference for Africa held at Nairobi from 18 to 21 May 1999. As announced in the Guayaquil Declaration, a further international conference on the 1997/98 ENSO event, hosted by the Government of Peru, will be held at Lima from 20 to 24 September 1999. The conference will focus on institutional arrangements, the role of decision makers and the application of scientific knowledge and technological expertise in El Niño-related prevention. Another conference, tentatively planned to be held at La Serena, Chile, from 12 to 15 October 1999, will investigate linkages between the El Niño phenomenon and the process of desertification, with support from the Government of Chile and with the participation of the Economic Commission for Latin America and the Caribbean and the United Nations Convention to Combat Desertification in Those Countries Experiencing Serious Drought and/or Desertification, particularly in Africa.

15. As a further follow-up to the Guayaquil seminar, in the segment on oceans and seas of the report on its seventh session, the Commission on Sustainable Development welcomed the intergovernmental expert meeting held at Guayaquil, and the two expert meetings to be held at Lima in September 1999 and at La Serena, Chile, in October 1999. The Commission also, *inter alia*:

(a) Requested the Secretary-General to gather information on all aspects of the impact of ENSO, through national reports on the implementation of Agenda 21, and to provide this information to the Inter-Agency Task Force in order to contribute to the development of the internationally concerted and comprehensive strategy towards the assessment, prevention, mitigation and rehabilitation of the damage caused by ENSO;

(b) Decided to consider the impacts of ENSO as part of its examination of the integrated planning and management of land resources at its eighth session;

(c) Invited all intergovernmental agencies concerned with aspects of the oceans to consider, within their respective mandates, whether their programmes of work make sufficient allowance for considerations of the potential impact of increased climate variability, and to review through the various coordination arrangements what more needs to be done to ensure adequate understanding of the prediction of coastal and marine impacts of such phenomena as El Niño.

III. Conclusions and recommendations

16. The experience with the 1997/98 El Niño event has reaffirmed the great predictive value of El Niño signals obtained from the equatorial Pacific. At the same time, however, additional influences exerted by oceanic and atmospheric processes taking place in the Indian and Atlantic Oceans have clearly made predictions much less reliable for certain areas outside the Pacific Ocean basin. It is clear that the precision of future ENSO predictions for such areas will critically depend on the integration of climate oscillations occurring in the Indian and Atlantic Oceans with those from the Pacific Ocean, based on a sound scientific understanding of the interactions between all three. In view of the very serious potential for damage, both in terms of human suffering and economic losses, efforts should be made to intensify and/or extend observations of climate oscillation systems in the three large ocean basins, and to further develop existing ENSO prediction skills, based on improved modelling.

17. Another pertinent conclusion from the effort to reduce the 1997/98 El Niño event concerns the availability of data and their usefulness for decision makers in the field. As compared with ENSO events in the past, there has probably never been as much information available at low cost, mainly as a result of the ever-increasing use of the Internet and the World Wide Web. Despite the existence of this rich source of information, it has not always been easily interpreted by user communities due to lack of processing and adaptation to their specific needs. The potential role of regional ENSO centres (such as the proposed Guayaquil centre) on this issue could be to facilitate the distribution of relevant information to users in countries within relatively homogeneous climatic regions, and to promote the best possible utilization of such information for the reduction of disaster impacts.

18. The early recognition of the unusual strength of the 1997/98 El Niño and the timely action undertaken on the General Assembly initiative, as expressed in its resolution 52/200, has provided an unprecedented opportunity to maximize the potential available within the IDNDR framework for early disaster prevention through advocacy and the wide distribution of information, including early warning, and to assess the effectiveness of these approaches as well as the weaknesses which still require further development. This has underscored the value of close inter-agency collaboration among disaster reduction constituencies at the regional and national levels, both within as well as outside the United Nations system. Efforts must therefore be made to ensure that the possibilities for well coordinated action will also exist after the conclusion of IDNDR at the end of 1999. These issues are to be discussed under agenda item 13 (h) (for details, see A/54/136–E/1999/89).

19. The Inter-Agency Task Force on El Niño has clearly shown the immense value of concerted action among United Nations system partners and their non-United Nations counterparts within the framework of IDNDR in advocacy, coordination of action and the wide dissemination of information. The Secretary-General invites the Council and the General Assembly not only to safeguard appropriate successor arrangements for disaster prevention but also to ensure continuation of the work of the Inter-Agency Task Force on El Niño (in keeping with Assembly resolution 53/185 and the report of the Commission on Sustainable Development on its seventh session, the Task Force should probably be renamed the Inter-Agency Task Force on ENSO) as a part of such arrangements.

20. From the start of IDNDR, the member agencies of what now constitutes IACCA (established in 1997) have formed a solid technical and scientific platform for action towards the goals and objectives of IDNDR in the prevention of climate-related natural disasters. In view of the important and probably growing global hazards posed by climate variability and extremes, including ENSO events, it is crucial that within the framework of the successor arrangements for IDNDR proposed by the Secretary-General (see A/54/136–E/1999/89), the strong institutional connections between IACCA and the United Nations system-wide disaster prevention constituency are retained.

Notes

[1] See "An experiment in the application of climate forecasts: NOAA-OGP activities related to the 1997/98 El Niño event" (NOAA, Office of Global Programs, 1999).

[2] In the present report, the joint consideration of both El Niño and La Niña will be reflected by the use of the term El Niño/Southern Oscillation, or ENSO.

[3] UNDP; the United Nations Educational, Scientific and Cultural Organization/Intergovernmental Oceanographic Commission; and the International Council of Scientific Unions.

[4] The International Research Institute for Climate Prediction of New York; and the Permanent Commission for the South Pacific and its subsidiary at Quito.

[5] Cuba, Costa Rica, Panama, Ecuador, Ethiopia, Kenya, Mozambique, China, Viet Nam, the Philippines, Papua New Guinea and Fiji.

Annex I

The 1997/98 El Niño: a scientific and technical retrospective*

1. The very strong 1997/98 El Niño event brought to international attention the global scale of risks posed by extremes of climate, particularly for the developing world. Loss of life, destruction of infrastructure, depletion of food and water reserves, displacement of communities and outbreaks of disease all occurred as manifestations of climate-related natural disasters. The international community recognized the intensity and global distribution of natural disasters associated with the El Niño event, which led to the conviction, as reflected in General Assembly resolutions 52/200 and 53/185, that steps should be taken to mitigate the negative impacts of climate extremes.

2. WMO took a lead role in coordinating scientific and technical information about the 1997/98 El Niño event. In particular, during the course of the event WMO prepared a series of publications, called *El Niño Updates*, providing information on the current status; these were issued to national meteorological and hydrological services and made available to the media and international agencies.

3. WMO, with UNEP, UNESCO/IOC and ICSU subsequently organized the scientific programme for the first global assessment of the 1997/98 El Niño event, carried out at Guayaquil, Ecuador, from 9 to 13 November 1998. The first global assessment (international seminar on the 1997/98 El Niño event: evaluation and projections) was co-sponsored by the Government of Ecuador, the Inter-Agency Task Force on El Niño and the Permanent Commission for the South Pacific.

4. WMO is nearing completion of a scientific review, to be published as *The 1997/98 El Niño Event: A Scientific and Technical Retrospective* with the support of UNEP and UNESCO/IOC as a contribution to the Inter-Agency Task Force on El Niño to establish a sound scientific and technical basis for new strategies to mitigate the negative impacts of climate extremes.

5. The material for the *Retrospective* is drawn from the presentations made at the first global assessment meeting at Guayaquil, national studies and scientific research. The *Retrospective* has three parts:

(a) Part I. Variability of the climate system: reviews relevant knowledge and processes of the climate system, including the Asian monsoon and El Niño, and describes the El Niño Southern Oscillation as an outcome of the coupled ocean-atmosphere system;

(b) Part II. The 1997/98 El Niño event: reviews the development and evolution of the 1997/98 El Niño event and the global pattern of climate extremes, examines many of the regional climate anomalies and provides information on the extent of human impacts and losses;

(c) Part III. The way ahead: examines how science and technology, supporting climate information and prediction services, can be used in the service of community preparedness, early warning and management of climate risk in society, particularly through the integration of science and technology with natural disaster reduction and sustainable development planning and policies.

* Prepared by WMO.

Annex II

International centre for the research of El Niño at Guayaquil, Ecuador: a feasibility study*

1. In response to General Assembly resolution 52/200 on international cooperation to reduce the effects of the El Niño phenomenon, the first global assessment of the 1997/98 El Niño event was carried out at Guayaquil, Ecuador, from 9 to 13 November 1998. The first global assessment (international seminar on the 1997/98 El Niño event: evaluation and projections) was co-sponsored by the Government of Ecuador, the United Nations Task Force on El Niño and the Permanent Commission for the South Pacific.

2. An outcome of the international seminar was the Declaration of Guayaquil, submitted to the General Assembly by the Government of Ecuador on 17 November 1998. The Declaration of Guayaquil called for, *inter alia*, immediate action to assess the feasibility of establishing an international centre for the research of the El Niño phenomenon at Guayaquil, as proposed by the Government of Ecuador, and suggested that such action be undertaken within the context of the Inter-Agency Task Force on El Niño.

3. WMO, through its Secretary-General, recognized the urgent need to undertake the feasibility study and organized a mission for the purpose from 28 January to 7 February 1999. The mission included consultations with the International Research Institute for Climate Prediction of New York, with institutes and senior officials at Quito and Guayaquil, and with other relevant international institutions.

4. The report of the feasibility study describes the scientific and organizational contexts, the scope and functions that such a centre should undertake, a suitable location, staff and equipment needs, and a proposed organizational arrangement. The report also outlines the probable contributions that would be required from the host countries, and the magnitude and nature of external resources required. These are estimated as US$ 1.1 million per annum and US$ 300,000 per annum, respectively, and a total of US$ 2.62 million for equipment capital costs (computing and observational infrastructure, not accommodation).

5. The report of the feasibility study has been made available to the Government of Ecuador and is currently under consideration.

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* Prepared by WMO.

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Economic and environmental questions: International Decade for Natural Disaster Reduction

Recommendations on institutional arrangements for disaster reduction activities of the United Nations system after the conclusion of the International Decade for Natural Disaster Reduction

Report of the Secretary-General

Summary

The present report is submitted in pursuance of General Assembly resolution 53/185. Together with the report of the Secretary-General on the International Decade for Natural Disaster Reduction (IDNDR) (A/54/132–E/1999/80 and Add.1) requested by the General Assembly in its resolution 44/236, the present report is intended to contribute to the Council's deliberations on the future arrangements for natural disaster reduction within the United Nations system. It is composed of three sections: the IDNDR mandate (sect. I); achievements of the Decade (sect. II); and recommendations for the future (sect. III). A list of regional and thematic IDNDR meetings held between June 1998 and June 1999 is contained in the annex. The report puts forward a proposal for the continuation of a non-operational focal function for policy development, advocacy and inter-agency coordination of disaster reduction activities in the United Nations system after the closure of the Decade.

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I. IDNDR mandate

1. The mandate assigned to the International Decade for Natural Disaster Reduction (IDNDR) was derived from the objective and goals formulated in the International Framework of Action, as adopted by the General Assembly in its resolution 44/236. The strategic focus at the start of the Decade was on disaster reduction through the scientific understanding of natural disasters, the assessment of their damage potential, and the mitigation and reduction of damage through technical assistance and technology transfer, education and training.

2. A mid-term review of IDNDR was undertaken by the Economic and Social Council at its substantive session of 1994; its results were endorsed by the General Assembly in its resolution 49/22 A. Based on the findings of the World Conference on Natural Disaster Reduction and guided by the Yokohama Strategy and Plan of Action (see A/CONF.172/9, chap. I, annex I), the mid-term review introduced new strategies for the second half of the Decade.

3. Consequently, IDNDR placed greater emphasis on social sciences and economics; focused on the development of public policy, including legislation and national policies for disaster reduction; intensified regional and subregional approaches, and shifted from emergency preparedness to the reduction of vulnerability and risk. Overall, more effort was put into the promotion of concrete applications of science and technology for disaster reduction. More attention was also paid to the users' community that is so crucial in the interface between disaster planning and concrete measures of implementation.

4. Considering the evolution in the nature, frequency, intensity and complexity of disasters worldwide (see sect. II below), the mandate of the United Nations system in dealing with disaster reduction is bound to evolve further. In order to preserve the United Nations system's ability to support the disaster reduction effort in Member States well beyond the year 2000, the momentum generated by the Decade should be maintained.

II. Achievements of the Decade

5. The achievements of the Decade are described in detail in the report of the Secretary-General on the Decade (A/54/132–E/1990/80 and Add.1). The present review of major lessons and observations on the evolution of disaster hazards worldwide is provided in support of proposals for future functional and institutional arrangements after the conclusion of IDNDR.

6. During the Decade, strong upward trends occurred in the severity and frequency of natural disasters worldwide, with increasing impacts on constructed environments and populations. In the past two years in particular, a sequence of large-scale natural disasters has reminded communities around the world of the threat posed by natural hazards. Most of these disasters have been statistically termed "one in 100 years events" and referred to as "disasters of the century" in the countries and regions affected (see box).

Some recent disaster highlights

In 1997/98, extensive El Niño-related drought and subsequent wildfires have caused massive social and economic disruption in Indonesia. At the same time, countries in Africa have suffered severely from both floods and drought. An earthquake in northern Afghanistan has caused large-scale loss of life and destruction of property. Bangladesh and China have, again, experienced floods of extreme proportions. Hurricanes Georges and Mitch have devastated vulnerable communities across Central America and the Caribbean. Extensive flooding and mudslides have also significantly affected the economies and human health situation of Pacific coast countries in South America. The economy of Papua New Guinea has nearly been brought to a standstill by the culmination of impacts of drought, frost and tsunamis. Europe has suffered one of its most severe floods in the Oder river basin, while tornadoes ravaged towns in North America, causing more fatalities and injuries than any other event in the preceding two decades. In February 1999, massive avalanches precipitated by unusually heavy snowfall in the Alpine region resulted in many fatalities and extensive structural damage.

7. According to the Munich Reinsurance company, economic losses from such major natural disasters have risen by a factor of nine since 1960. The last year, 1998, has been particularly severe in comparison, with overall losses from some 700 natural disasters estimated at US$ 93 billion. This gradual increase in the losses is attributed to a variety of factors, often acting in conjunction, such as:

(a) The continuing concentration of population and assets in high-risk areas, with insufficient efforts towards risk and vulnerability reduction;

(b) The global neglect of disaster reduction strategies in socio-economic planning, risk assessment and monitoring, early warning and disaster preparedness;

(c) The increasing vulnerability of modern industrialized societies to disasters, *inter alia*, due to reliance on complex infrastructure systems;

(d) The degradation of the natural environment, leading to negative synergies between the occurrence of natural phenomena and increased risks for communities exposed to natural hazards;

(e) Increasingly convincing evidence of global climate change, including a possible aggravation of climate variability, such as the El Niño/La Niña phenomenon;

(f) Increased occurrence of so-called "compound" disasters (natural-technological, natural-environmental);

(g) The effects of large-scale poverty in the developing world and a potential for economic collapse in countries in economic transition, which would increase community vulnerability to natural disasters.

8. Despite these negative trends, there have been several developments in the opposite direction at the global level, which have helped to support the Decade's goals and objectives, *inter alia*:

(a) An increasing realization in many professional fields of the need for a broader orientation on intersectoral approaches, such as in climatology, which considers disaster reduction in relation to environmental change, water resources management, coastal zone management and sea level rise;

(b) A growing understanding of the human dimension in the occurrence of natural disasters, and of the relationships between socio-economic factors, risk factors and disaster vulnerability;

(c) Dramatic improvements in the development of compact and powerful telecommunications and computer systems, which has improved access to information and real-time data on natural hazards in most parts of the world;

(d) Investment in earth observations technology and the establishment of global monitoring systems for oceans, land areas and climate (Global Ocean, Terrestrial and Climate Observing Systems);

(e) An increased interest in the study of global environmental change, in particular climate change and climate variability, and dramatic improvements in the scientific understanding of the global climate regime, the forecasting of climate variability and extremes, and the projection of their impacts on society.

9. Consequently, the Decade's objectives have gained increasing recognition at the national level, as witnessed by the steadily growing numbers (currently 141) of Member States with national IDNDR committees or focal points, and the gradual policy shift from response and recovery to reduction and preparedness in the national disaster plans of most of these countries. Regional IDNDR conferences, which brought Governments together with key disaster management organizations in each of the five regions of the world as part of the final IDNDR action plan for 1998/99, have demonstrated the potential for exchange and sharing of experience and approaches between countries at the regional level. Reinforced by IDNDR applications, such as the Risk Assessment Tools for Diagnosis of Urban Areas against Seismic Disasters initiative, the IDNDR focus on early warning as a key disaster reduction tool and IDNDR's promotion campaigns, such as the annual International Disaster Reduction Day established by the General Assembly in its resolution 44/236, paragraph 2, such geographic common approaches have contributed to an almost system-wide reaffirmation of the immense value of disaster reduction as an integral part of sustainable development strategies.

10. The IDNDR Inter-Agency Steering Committee has served as a common platform for the development of disaster reduction activities among IDNDR partner agencies inside and outside the United Nations. Several of these, such as the World Meteorological Organization (WMO), the United Nations Educational, Scientific and Cultural Organization /Intergovernmental Oceanographic Commission (UNESCO/IOC), the United Nations Environment Programme (UNEP), the World Bank and the International Council of Scientific Unions (ICSU), have defined a new disaster orientation in their programmes. Others, such as the United Nations Development Programme (UNDP), the World Health Organization (WHO), the Food and Agriculture Organization of the United Nations (FAO), the United Nations Industrial Development Organization (UNIDO) and the Council of Europe, have intensified disaster reduction efforts that had already been in place prior to the Decade. And others have intensified collaboration on disaster reduction as a specific contribution to the Decade, as is the case with joint ventures between WMO and UNESCO, between the World Health Organization (WHO), the Office of the United Nations High Commissioner for Refugees (UNHCR) and the International Federation of Red

Cross and Red Crescent Societies (IFRC), and others. The IDNDR Scientific and Technical Committee has contributed significantly policy development; its final report is contained in document A/54/132–E/1990/80/Add.1.

11. In 1997/98, the rapid creation of the Inter-Agency Task Force on El Niño within the framework of IDNDR provided a specific example of intersectoral cooperation among diverse international agencies. Through the IDNDR action plan 1998–1999, with its specific objectives and targeted activities, the IDNDR secretariat has facilitated concerted action in the fields of policy development, advocacy and inter-agency coordination in support of a comprehensive disaster reduction strategy for the twenty-first century. The regional and thematic IDNDR meetings, organized within this action plan (see annex) have demonstrated the potential for exchange and sharing of experience between countries at the regional and international levels. With the increase in frequency and severity of natural and technological hazards, the merits of such common platforms have become more manifest in recent years.

III. Recommendations for the future

12. A final assessment of the Decade must take into account the possible evolution of disaster reduction in the twenty-first century. On the one hand, changes in the need for disaster reduction will be determined by the changing patterns of natural hazards, their future potential for association with technological disasters or political conflicts, and shifts in the socio-economic and demographic trends. On the other hand, new technological tools and their wider availability will potentially alter the nature of disaster reduction. Based on the lessons learned during the past 10 years and current trends in society, politics and the sciences, future disasters will be characterized by the following factors, all potentially acting in conjunction:

(a) As population pressure mounts in specific areas of the world, more people may live in or depend on disaster-vulnerable ecosystems;

(b) Where sustained economic growth does not keep pace with population growth, large-scale poverty may increase and, hence, vulnerability to disasters;

(c) As global environmental change continues, new natural hazards may develop and new combinations of existing hazards may have unprecedented consequences;

(d) Increasing vulnerability of growing populations in high-risk areas may trigger large-scale population movements.

13. However, at the same time it may be expected that:

(a) The ever-increasing ability of monitoring, modelling and forecasting the behaviour of climate regimes and global environmental change may lead to considerably improved early warning systems for a larger range of natural disasters;

(b) More powerful telecommunication tools, combined with smaller but more powerful electronic computing and positioning systems, will improve the efficiency of response and relief operations during and following disasters and allow for better coordination of disaster management.

14. Disasters occur when natural, technical and human-induced phenomena impact on vulnerable socio-economic systems. Vulnerability to disasters is a function of objective hazards and human activity in a constructed environment. Human behaviour patterns can be influenced; therefore, vulnerability can be reduced. This makes disaster reduction not a random choice but a moral imperative. If communities need not suffer, they should not suffer. In addition, there are important socio-economic benefits of disaster reduction. Insufficient investment in disaster reduction leads to much higher costs for humanitarian assistance and reconstruction following natural disasters, and to a widening development gap between rich and poor communities. The cost-effectiveness of disaster reduction thus makes it a strategic imperative as well.

15. Disaster reduction provides a strategic opportunity for humanitarian assistance to formulate concerted approaches which include measures of prevention, preparedness and response, as well as rehabilitation and reconstruction leading to a higher level of community disaster resilience. Disaster reduction thus offers a real opportunity to effectively link the humanitarian and sustainable development constituencies in their efforts to achieve social and economic stability.

16. The lessons learned during the Decade demonstrate that disaster reduction must go beyond sectoral mainstreaming. It needs to be recognized in a large number of sectoral strategies, including those in development planning and technical cooperation, disaster management and humanitarian assistance, the protection of natural resources, the management of population growth and the mitigation of climate change. Disaster reduction must thus be applied at a multitude of levels by a great variety of actors, in both public and private-sector domains.

17. Important actors in this respect are public officials in Member States, who are able to improve disaster reduction policy-making. The second Asia-Europe Foreign Ministers'

Meeting, held at Berlin on 29 March 1999, unanimously endorsed the IDNDR approach to disaster reduction within the framework of advancing international cooperation between the European Union and 10 Asian States. It stressed the importance of improved international cooperation, including early warning, to reduce the impact of the El Niño phenomenon. As another example, the African determination to ensure the integration of disaster reduction in Government policies culminated in the Nairobi Declaration on Natural Disaster Reduction, adopted at the conclusion of the IDNDR-UNEP meeting for Africa (18–21 May 1999), which asserts that it is important to ensure continuity of disaster reduction in Africa after the conclusion of IDNDR in 1999, so that the positive results achieved during the Decade are not lost, and that the United Nations system should ensure the continuation of the functions of advocacy and coordination at the international level performed so far by the IDNDR secretariat. Similar statements can be found in the concluding observations formulated by the STC in its Final Report.

18. The overall evaluation of IDNDR demonstrates that disaster reduction is not a static concept with fixed methods of work but is subject to evolution in accordance with changing challenges and ever-increasing technical opportunities. In order to ensure that the Decade's achievements will not be lost, the momentum of this continuous review, assessment and reform of disaster reduction philosophy, its application and its policies must be maintained. As confirmed by the Decade, the United Nations system provides an eminently suited framework for bringing the various interests together in the mutual interest of all. It is thus crucially important that a platform is maintained for cooperation through coordination, and for the promotion of synergies rather than compartmentalization among stakeholders.

19. In this connection, the IDNDR secretariat produced a proposal for future arrangements for natural disaster prevention activities following the closure of the Decade as a position paper for discussion in the Inter-Agency Steering Committee meeting of 25 January 1999. The note, subsequently presented to the Organizational Committee (OC)/ACC in March 1999, proposed the establishment, on 1 January 2000, of an inter-agency secretariat for natural disaster reduction, composed of an international team of experts, *inter alia*, seconded by United Nations organizations, Governments, and non-governmental organizations, funded by voluntary contributions from Member States and other sources. The note also recognized the need for an inter-agency task force for natural disaster reduction, which would be composed of representatives from within and from outside the United Nations system.

20. The task force would provide a platform for the realization of disaster reduction in a concerted manner, particularly through dialogue and consensus-building among sectoral entities both within and outside the United Nations system. Its major functions would be:

(a) To serve as the main forum within the United Nations system for devising strategies and policies for the reduction of natural hazards;

(b) To identify gaps in disaster reduction policies and programmes and recommend remedial action;

(c) To ensure complementarity of action by agencies involved in disaster reduction;

(d) To provide policy guidance to the secretariat;

(e) To convene ad hoc meetings of experts on disaster reduction-related issues.

The task force would work in full accordance with existing institutional arrangements in the United Nations system which may relate to natural disaster reduction concerns.

21. The proposed secretariat would serve as a substantive secretariat for the task force. Its mandate would consist of advocacy, policy development and coordination of the United Nations system's activities in the field of natural disaster reduction. Its main functions would be:

(a) To serve as the focal point within the United Nations system for the coordination of strategies and programmes for natural disaster reduction, and to ensure synergy between disaster reduction strategies and those in the socio-economic and humanitarian fields;

(b) To support the Inter-Agency Task Force in the development of policies on natural disaster reduction;

(c) To promote a worldwide culture of reduction of the negative effects of natural hazards, through advocacy campaigns;

(d) To serve as an international clearing house for the dissemination and exchange of information and knowledge on disaster reduction strategies;

(e) To backstop the policy and advocacy activities of national committees for natural disaster reduction.

22. OC/ACC took note of the information paper, and in order to assist the Secretary-General in formulating his recommendations for presentation to the General Assembly through the Council, OC/ACC:

(a) Expressed appreciation for the contribution that the United Nations system, especially the IDNDR secretariat, had made in advancing advocacy and enhancing awareness in the area of natural disaster, preparedness, and mitigation and relief;

(b) Agreed on the need for the continued enhancement of collaboration among the members of the United Nations system and to further strengthen their capacities in this regard;

(c) Emphasized the importance of mainstreaming these activities as an integral part of sustainable development and national strategies;

(d) Welcomed inter-agency, multisectoral and interdisciplinary approaches to natural disaster reduction, including preparedness, prevention and mitigation;

(e) Noted the importance of ensuring synergies between actors within the United Nations system and those outside it in the context of disaster awareness, prevention, and preparedness as well as response;

(f) Noted also the growing awareness among different organizations of the link between disaster and development and the initiatives taken by them, including those by the World Bank, to strengthen their capacity to participate in natural disaster preparedness, prevention and mitigation activities, as well as the responsibility given to UNDP by the General Assembly for operational disaster prevention, mitigation and preparedness;

(g) Emphasized the non-operational character and universality of the advocacy dimension of the objectives of IDNDR;

(h) Took note of the information provided by the International Telecommunication Union (ITU) on how to sign/ratify the Tampere Convention which provides a legal framework for the use of telecommunications in international humanitarian assistance;

(i) Noted that the considerable recent advances in seasonal weather and climate predictions, including of such phenomena as El Niño, enable improved preparedness of vulnerable communities against natural disasters. This highlighted the importance of a visible focal point within the United Nations system for scientific and technical aspects of natural disaster preparedness, prevention and mitigation.

23. OC/ACC noted the different options for the institutional arrangements for such an inter-agency secretariat, and also noted that in the light of these considerations, the secretariat would make these options the subject of consultation with agencies most directly concerned prior to submission to the General Assembly through the Council. In this context, OC/ACC emphasized the importance of an inter-agency approach in the follow-up and cautioned against the proliferation of secretarial functions. Subsequently, the IDNDR secretariat has held a series of consultations on the subject with several of the agencies and other relevant institutions closely associated with the work of the Decade.

24. After careful review of the achievements of the Decade and future challenges in the field of natural disaster reduction, and having carefully considered the views expressed in the course of consultations, the Secretary-General believes that future arrangements must (a) provide optimal conditions for the non-operational inter-agency nature of natural disaster advocacy; (b) facilitate the continuing dialogue with both the humanitarian assistance and sustainable development constituencies, and foster synergies and complementarity between the two; and (c) afford high visibility for the goals of disaster reduction within the framework of the United Nations. The Secretary-General believes that these conditions are best realized by establishing an inter-agency task force on natural disaster reduction, as proposed in paragraphs 18–20 above, and by placing the proposed inter-agency secretariat as a distinct entity integrated within the Office for the Coordination of Humanitarian Affairs, under the responsibility of the Under-Secretary-General for Humanitarian Affairs. The inter-agency secretariat would be financed from extrabudgetary resources, through a trust fund.

Annex

List of regional and thematic IDNDR evaluation meetings, June 1998–June 1999

Regional meetings

Central Europe (Prague, June 1998)

Europe (London, June 1998)

Seventh annual South Pacific regional disaster meeting (Nuku'alofa, Tonga, July 1998)

Regional conference for CIS and Central Eastern European countries (Yerevan, September 1998)

IDNDR-ESCAP regional meeting for Asia (Bangkok, February 1999)

Prevention and reduction of natural disasters in the Mediterranean (Valencia, May 1999)

IDNDR-UNEP regional meeting for Africa (Nairobi, May 1999)

Hemispheric conference for Latin America and the Caribbean (San José, May–June 1999)

Thematic meetings

Intergovernmental meeting on emergency telecommunications (Tampere, Finland, June 1998)

International conference on early warning (Potsdam, Germany, September 1998)

International seminar on natural disaster reduction for roads in the Mediterranean countries (Istanbul, October 1998)

First intergovernmental seminar of experts on El Niño (Guayaquil, Ecuador, November 1998)

Conference on mountain natural hazards (Grenoble, France, April 1999)

Natural disaster prevention: land-use planning and sustainable development (Paris, June 1999)